

Exhibit 6

Exhibit 7 - U.S. Patent No. 9,094,888 (“’888 Patent”)

Accused Instrumentalities: cellular base stations that support handover between 4G LTE and 5G NR wireless networks, and all versions and variations thereof since the issuance of the asserted patent.

Claim 9

Claim 9	Public Documentation
<p>[9pre] A method implemented at a first wireless network for a mobile wireless device handoff between a second wireless network and the first wireless network, the method comprising:</p>	<p>To the extent the preamble is found to be limiting, the Accused Instrumentalities perform a method implemented at a first wireless network for a mobile wireless device handoff between a second wireless network and the first wireless network.</p> <p>For example, the Accused Instrumentalities perform a method for handoff of a mobile wireless device between a second wireless network, comprising for example a 4G LTE eNodeB or ng-eNodeB base station, and a first wireless network, comprising for example a 5G NR gNodeB base station. This method is described, for example, in 3GPP standards documents such as TS 38.300, which describe aspects of the operations of the eNodeB/ng-eNodeB and gNodeB and associated components of the Accused Instrumentalities.</p> <h3 data-bbox="737 781 1236 821">4.1 Overall Architecture</h3> <p data-bbox="737 850 1024 875">An NG-RAN node is either:</p> <ul data-bbox="774 902 1814 980" style="list-style-type: none"> - a gNB, providing NR user plane and control plane protocol terminations towards the UE; or - an ng-eNB, providing E-UTRA user plane and control plane protocol terminations towards the UE. <p data-bbox="737 1008 1927 1118">The gNBs and ng-eNBs are interconnected with each other by means of the Xn interface. The gNBs and ng-eNBs are also connected by means of the NG interfaces to the 5GC, more specifically to the AMF (Access and Mobility Management Function) by means of the NG-C interface and to the UPF (User Plane Function) by means of the NG-U interface (see TS 23.501 [3]).</p> <p data-bbox="774 1146 1766 1170">NOTE: The architecture and the F1 interface for a functional split are defined in TS 38.401 [4].</p>

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The NG-RAN architecture is illustrated in Figure 4.1-1 below.

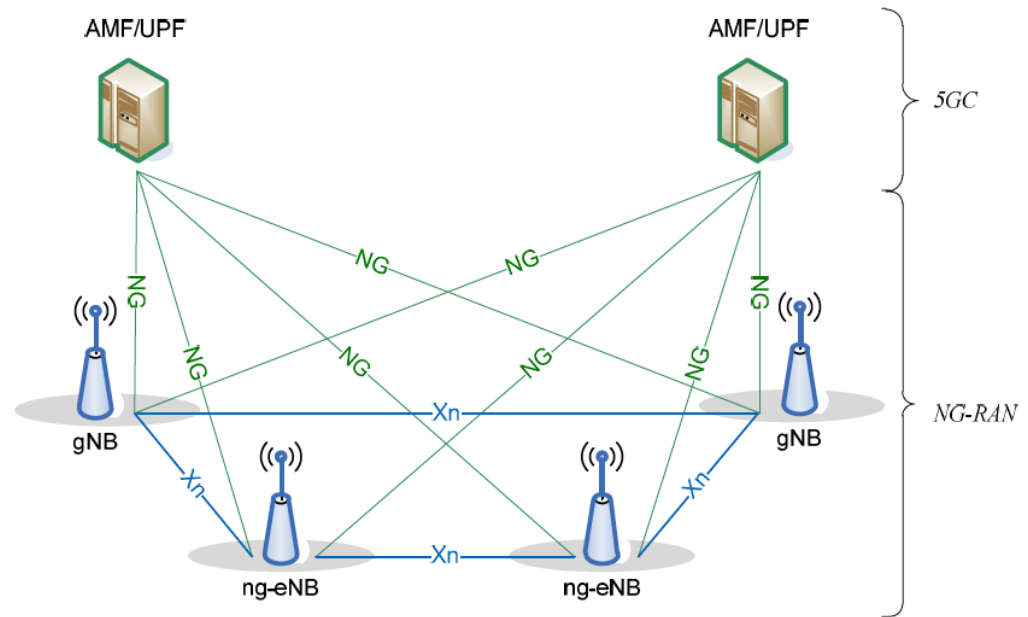
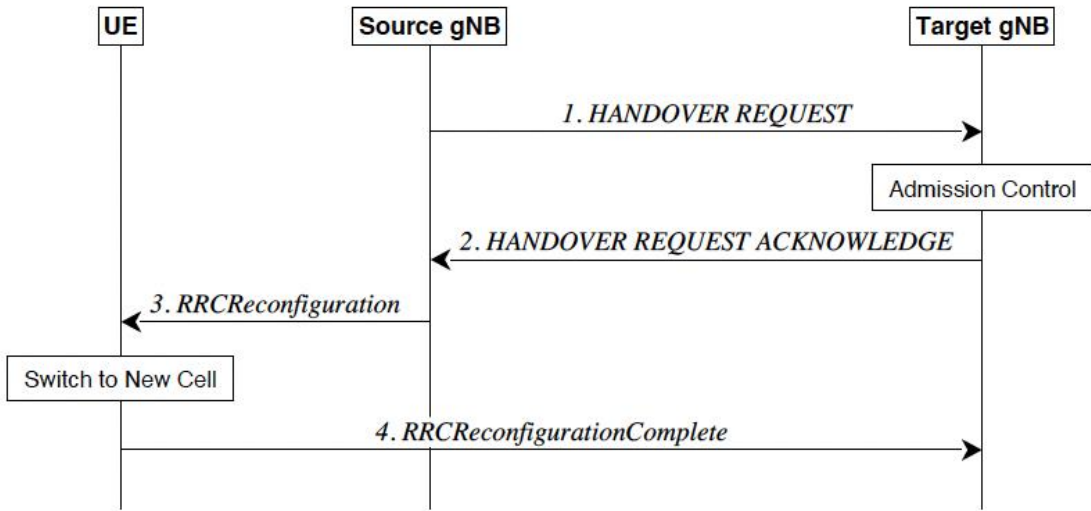


Figure 4.1-1: Overall Architecture

(3GPP TS 38.300 v17.2.0, § 4.1)

The method includes a handover request and an acknowledgement, as illustrated for example in the following figure:

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	 <p style="text-align: center;">Figure 9.2.3.1-1: Inter-gNB handover procedures</p> <p>(3GPP TS 38.300 v17.2.0, Figure 9.2.3.1-1.) In this figure, the source node is a gNodeB, but a similar request and acknowledgement will be used when the source node is an eNodeB or ng-eNodeB.</p>
<p>[9a] receiving a handoff request from the second wireless network, the handoff request based, at least in part, on a determination by the second wireless network that the wireless device is not currently covered by the first wireless network but is capable of being covered by the first wireless network;</p>	<p>The Accused Instrumentalities receive a handoff request from the second wireless network, the handoff request based, at least in part, on a determination by the second wireless network that the wireless device is not currently covered by the first wireless network but is capable of being covered by the first wireless network.</p> <p>For example, in the Accused Instrumentalities a target NG-RAN node (such as a gNodeB) can receive a handoff request from a source eNodeB, based in part on a determination that the wireless device is capable of being covered by the target gNodeB:</p>

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	<p data-bbox="726 248 1493 285">9.3.3 NR-E-UTRA mobility: From EPC to 5GC</p> <p data-bbox="726 326 1409 363">9.3.3.1 Data Forwarding for the Control Plane</p> <p data-bbox="726 386 1850 412">Control plane handling for inter-System data forwarding from EPS to 5GS follows the following key principles:</p> <ul style="list-style-type: none"> <li data-bbox="762 436 1276 462">- Only forwarding of downlink data is supported. <li data-bbox="762 488 1923 630">- The target NG-RAN node receives in the Handover Request message the mapping between E-RAB ID(s) and QoS Flow ID(s). It decides whether to accept the data forwarding for E-RAB IDs proposed for forwarding within the Source NG-RAN Node to Target NG-RAN Node Transparent Container. Based on availability of direct data forwarding path the source eNB may request to apply direct data forwarding by indicating direct data forwarding availability to the CN. <li data-bbox="762 656 1150 682">- In case of indirect data forwarding: <ul style="list-style-type: none"> <li data-bbox="798 708 1885 761">- The target NG-RAN node assigns a TEID/TNL address for each PDU session for which at least one QoS flow is involved in the accepted data forwarding. <li data-bbox="798 787 1934 841">- The target NG-RAN node sends the Handover Request Acknowledge message in which it indicates the list of PDU sessions and QoS flows for which it has accepted the data forwarding. <li data-bbox="798 867 1864 920">- A single data forwarding tunnel is established between the UPF and the target NG-RAN node per PDU session for which at least data for a single QoS Flow is subject to data forwarding. <li data-bbox="798 946 1934 1000">- The source eNB receives in the Handover Command message the list of E-RAB IDs for which the target NG-RAN node has accepted data forwarding of corresponding PDU sessions and QoS flows. <li data-bbox="762 1026 1129 1052">- In case of direct data forwarding: <ul style="list-style-type: none"> <li data-bbox="798 1078 1896 1131">- The source eNB indicates direct path availability to the CN. The source eNB's decision is indicated by the CN to the target NG-RAN node. <li data-bbox="798 1157 1881 1183">- The target NG-RAN node assigns a TEID/TNL address for each E-RAB it accepted for data forwarding. <li data-bbox="798 1209 1934 1263">- The source eNB receives in the Handover Command message the list of E-RAB IDs for which the target NG-RAN node has accepted data forwarding. <p data-bbox="682 1276 1073 1302">(3GPP TS 38.300 v17.2.0, § 9.3.3.1)</p>

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	<p>As another example, in the Accused Instrumentalities a target gNodeB can receive a handoff request from a source ng-eNodeB, based in part on a determination that the wireless device is capable of being covered by the target gNodeB:</p> <p>9.3.1.2 Handover</p> <p>Inter RAT mobility is characterised by the following:</p> <ul style="list-style-type: none"> - The Source RAT configures Target RAT measurement and reporting. - The source RAT decides on the preparation initiation and provides the necessary information to the target RAT in the format required by the target RAT: <ul style="list-style-type: none"> - For handover preparation from E-UTRA to NR, the source RAT issues a handover preparation request message to the target RAT passing a transparent RRC container with necessary information to prepare the handover at the target side. The information for the target RAT is the same type as specified in clause 9.2.3.2.1 including the current QoS flow to DRB mapping applied to the UE and RRM configuration. - The details of RRM configuration are the same type as specified for NR in clause 9.2.3.2.1 including beam measurement information for the listed cells if the measurements are available. - Radio resources are prepared in the target RAT before the handover. - The RRC reconfiguration message from the target RAT is delivered to the source RAT via a transparent container, and is passed to the UE by the source RAT in the handover command: <ul style="list-style-type: none"> - The inter-RAT handover command message carries the same type of information required to access the target cell as specified for NR baseline handover in clause 9.2.3.2.1. - The in-sequence and lossless handover is supported for the handover between gNB and ng-eNB. <p>(3GPP TS 38.300 v17.2.0, § 9.3.1.2)</p>
<p>[9b] based, at least in part, on the handoff request, adapting one or more beams of an antenna array to facilitate coverage of the wireless device by the first wireless network; and</p>	<p>The Accused Instrumentalities adapt, based at least in part on the handoff request, one or more beams of an antenna array to facilitate coverage of the wireless device by the first wireless network.</p> <p>For example, in the Accused Instrumentalities, a target gNodeB will have one or more antenna arrays, each providing multiple radio beams:</p>

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Antenna array structure

The purpose of using a rectangular antenna array, as shown in section A of Figure 2, is to enable high-gain beams and make it possible to steer those beams over a range of angles. The gain is achieved, in both UL and DL, by constructively combining signals from a number of antenna elements. The more antenna elements there are, the higher the gain. Steerability is achieved by individually controlling the amplitude and phase of smaller parts of the antenna array. This is usually done by dividing the antenna array into so called sub-arrays (groups of non-overlapping elements), as shown in section C of Figure 2, and by applying two dedicated radio chains per sub-array (one per polarization) to enable control, as shown in section D. In this way it is possible to control the direction and other properties of the created antenna array beam.

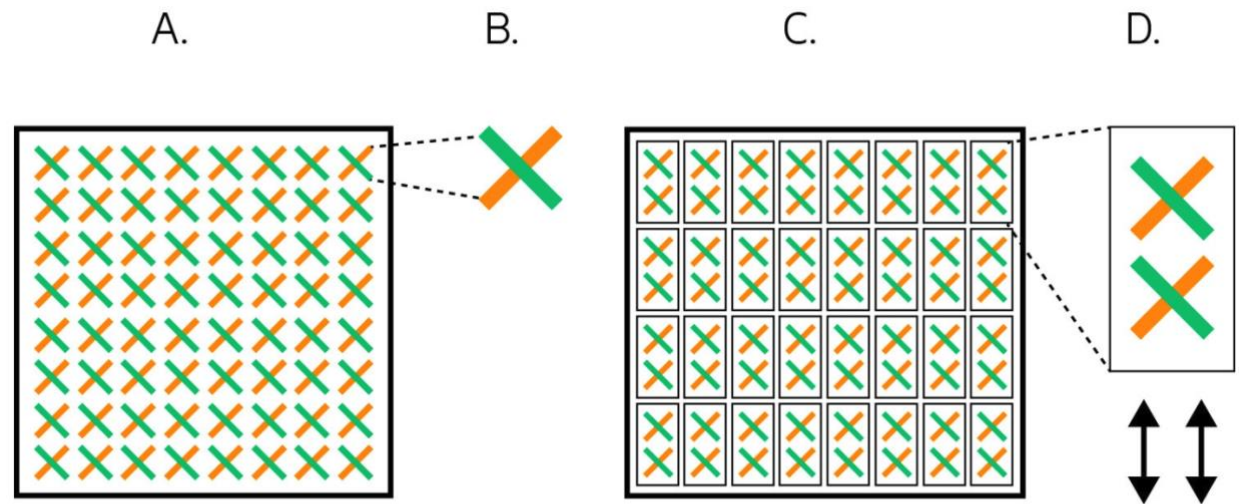
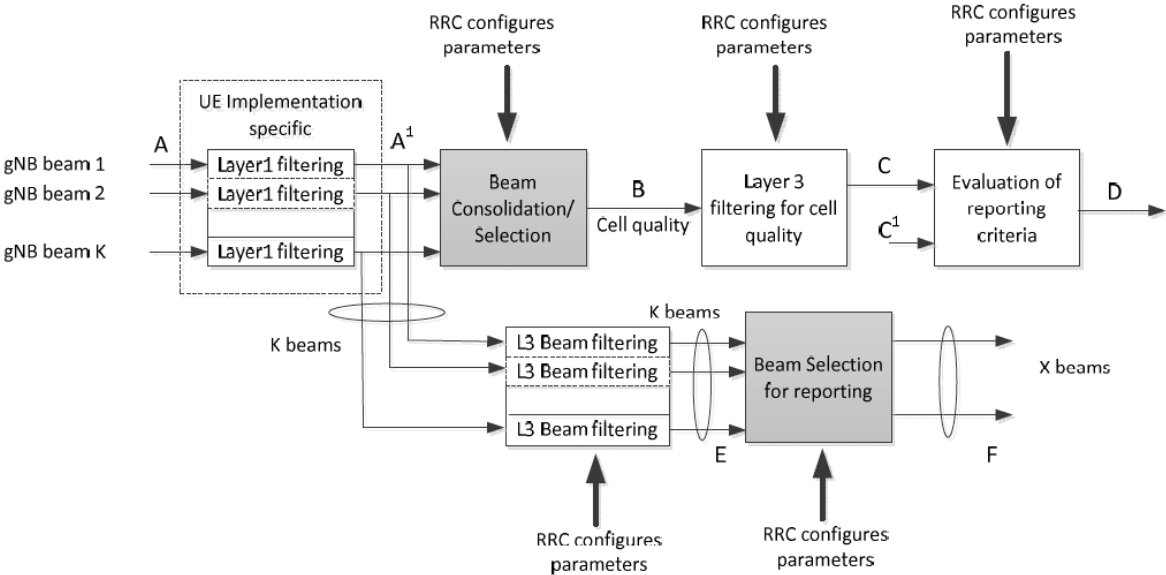


Figure 2: A typical antenna array (A) is made up of rows and columns of individual dual-polarized antenna elements (B). Antenna arrays can be divided into sub-arrays (C), with each sub-array (D) connected to two radio chains, normally one per polarization.

(<https://www.ericsson.com/en/reports-and-papers/white-papers/advanced-antenna-systems-for-5g-networks>)

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	<p>As a further example, the target gNodeB will adapt one or more of the beams of an antenna array to facilitate coverage of the mobile wireless device:</p> <p>Beam Level Mobility does not require explicit RRC signalling to be triggered. Beam level mobility can be within a cell, or between cells, the latter is referred to as inter-cell beam management (ICBM). For ICBM, a UE can receive or transmit UE dedicated channels/signals via a TRP associated with a PCI different from the PCI of a serving cell, while non-UE-dedicated channels/signals can only be received via a TRP associated with a PCI of the serving cell. The gNB provides via RRC signalling the UE with measurement configuration containing configurations of SSB/CSI resources and resource sets, reports and trigger states for triggering channel and interference measurements and reports. In case of ICBM, a measurement configuration includes SSB resources associated with PCIs different from the PCI of a serving cell. Beam Level Mobility is then dealt with at lower layers by means of physical layer and MAC layer control signalling, and RRC is not required to know which beam is being used at a given point in time.</p> <p>SSB-based Beam Level Mobility is based on the SSB associated to the initial DL BWP and can only be configured for the initial DL BWPs and for DL BWPs containing the SSB associated to the initial DL BWP. For other DL BWPs, Beam Level Mobility can only be performed based on CSI-RS.</p> <p>(3GPP TS 38.300 v17.2.0, § 9.2.3.1)</p> <p>9.2.4 Measurements</p> <p>In RRC_CONNECTED, the UE measures multiple beams (at least one) of a cell and the measurements results (power values) are averaged to derive the cell quality. In doing so, the UE is configured to consider a subset of the detected beams. Filtering takes place at two different levels: at the physical layer to derive beam quality and then at RRC level to derive cell quality from multiple beams. Cell quality from beam measurements is derived in the same way for the serving cell(s) and for the non-serving cell(s). Measurement reports may contain the measurement results of the <i>X</i> best beams if the UE is configured to do so by the gNB.</p> <p>The corresponding high-level measurement model is described below:</p>

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	 <p style="text-align: center;">Figure 9.2.4-1: Measurement Model</p> <p>NOTE 1: K beams correspond to the measurements on SSB or CSI-RS resources configured for L3 mobility by gNB and detected by UE at L1.</p> <p>(3GPP TS 38.300 v17.2.0, § 9.2.4)</p>
<p>[9c] transmitting a confirmation from the first wireless network to the second wireless network to indicate acceptance of the handoff request, wherein the wireless device is handed off from the second wireless network to the first wireless network.</p>	<p>The Accused Instrumentalities transmit a confirmation from the first wireless network to the second wireless network to indicate acceptance of the handoff request, wherein the wireless device is handed off from the second wireless network to the first wireless network.</p> <p>For example, handoff in the Accused Instrumentalities involves steps shown in the following call flow diagram:</p>

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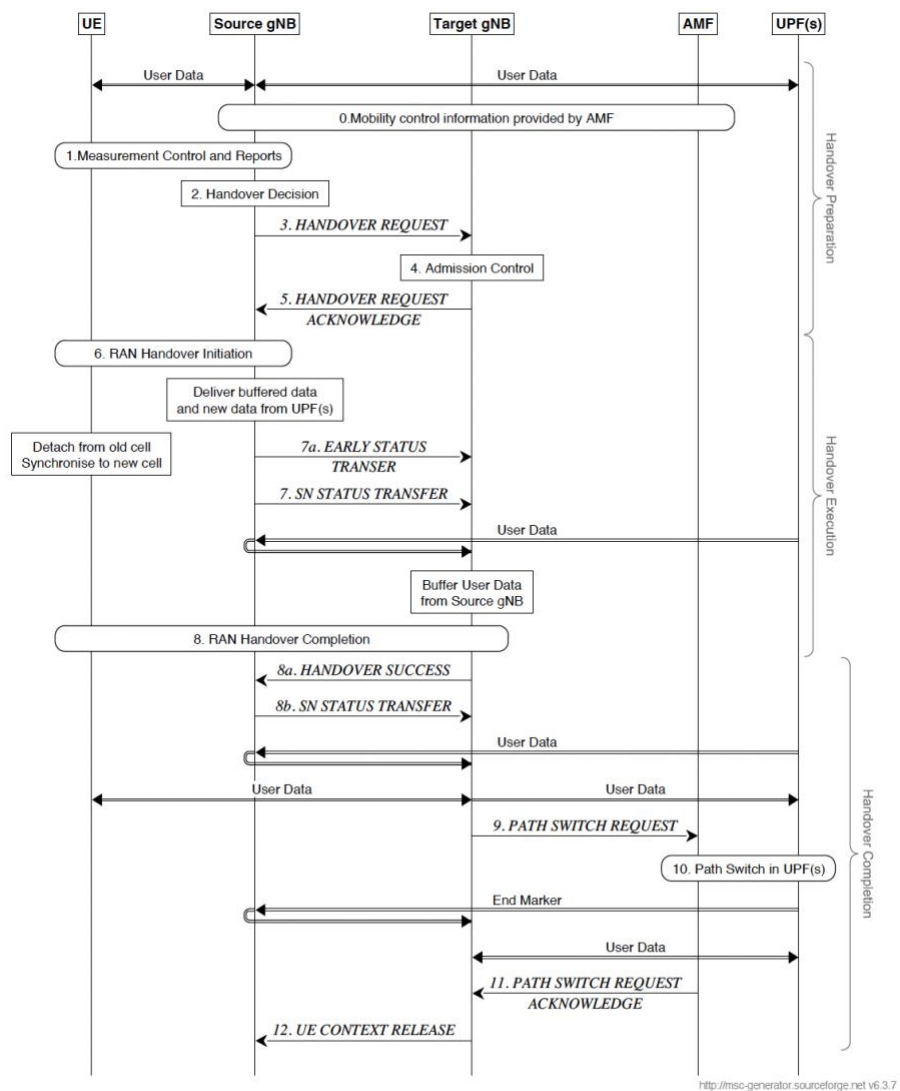


Figure 9.2.3.2.1-1: Intra-AMF/UPF Handover

(3GPP TS 38.300 v17.2.0, Figure 9.2.3.2.1-1.)

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	<p>While the source node in this diagram is labeled “Source gNB,” this source node may be a node with a 4G LTE radio interface, such as an ng-eNodeB. The target gNodeB transmits one or more confirmations, e.g., shown in the diagram above, to the source node, such as an ng-eNodeB. The wireless device is handed off from the source node wireless network to the target node wireless network:</p> <p>12. Upon reception of the PATH SWITCH REQUEST ACKNOWLEDGE message from the AMF, the target gNB sends the UE CONTEXT RELEASE to inform the source gNB about the success of the handover. The source gNB can then release radio and C-plane related resources associated to the UE context. Any ongoing data forwarding may continue.</p> <p>(3GPP TS 38.300 v17.2.0, § 9.2.3.2.1)</p>